

WHAT IS CLAIMED IS:

1. A dedicated short-range communication on-vehicle apparatus mounted on a motor vehicle in a dedicated short-range communication system for an intelligent traffic system, comprising:
  - an antenna having directivity in a predetermined direction;
  - a radio module for performing transmission/ reception of radio wave with road-side radio equipment by way of said antenna;
  - a data processing unit for processing transmission/reception data transmitted/received by said radio module; and
  - a box-like housing for housing therein said antenna, said radio module and said data processing unit in a unitary structure, wherein said box-like housing is adapted to be fixedly attached onto a windshield of the motor vehicle with a mounting plate being disposed on the radiation side of said antenna by means of an adhesive member, and
  - wherein at least a radio wave aperture portion of said mounting plate is made of a radio wave transmissible material.
2. A dedicated short-range communication on-vehicle apparatus according to claim 1,
  - further comprising:
    - a substrate 5 on which at least one of said radio module and said data processing unit is mounted,
    - wherein when said antenna is so set as to be transmissible in a direction orthogonal to said substrate, a substrate surface region located above an antenna transmissive planar region is greater than a substrate surface region located beneath said antenna transmissive planar region.
3. A dedicated short-range communication on-vehicle apparatus according to claim 1,
  - wherein said antenna, said radio module and said data processing unit are mounted on one and the same substrate, and wherein the area of a substrate surface region located above said

antenna is selected greater than a substrate surface region located below said antenna.

4. A dedicated short-range communication on-vehicle apparatus according to claim 3,

wherein said antenna is mounted on said substrate at either one end portion thereof as viewed in horizontal direction of said substrate.

5. A dedicated short-range communication on-vehicle apparatus according to claim 3,

wherein said antenna is constituted by a micro-strip antenna formed on said substrate.

6. A dedicated short-range communication on-vehicle apparatus according to claim 3,

wherein a plurality of through holes are formed at positions surrounding outer peripheral edges of said antenna on said substrate.

7. A dedicated short-range communication on-vehicle apparatus according to claim 3,

wherein said substrate is implemented in the form of a multi-layer substrate, wherein said antenna feeder line is provided on the surface opposite to that for said antenna.

8. A dedicated short-range communication on-vehicle apparatus according to claim 3,

wherein a pair of feeder lines destined for supplying electric power to said antenna are formed arcuately in the direction in which a distance between these feeder lines increases.

9. A dedicated short-range communication on-vehicle apparatus according to claim 1,

wherein electrically conductive member is disposed on an inner peripheral surface of said box-like housing except for a region corresponding to orientation of directivity of said antenna

disposed internally of said box-like housing.

10. A dedicated short-range communication on-vehicle apparatus according to claim 9,

wherein said electrically conductive member is disposed on an inner peripheral surface located oppositely to the orientation directivity of said antenna disposed internally of said box-like housing.

11. A dedicated short-range communication on-vehicle apparatus according to claim 9,

wherein said electrically conductive members are disposed on said inner peripheral surfaces of said box-like housing located oppositely to outer peripheral portions of said substrate disposed internally of said box-like housing.

12. A dedicated short-range communication on-vehicle apparatus according to claim 1,

further comprising:

a label carrying predetermined information and designed to be stuck on said mounting plate; and

a seal stuck on said mounting plate so as to cover said label.

13. A dedicated short-range communication on-vehicle apparatus according to claim 12,

wherein said seal is a semitransparent seal.

14. A dedicated short-range communication on-vehicle apparatus according to claim 12,

wherein said seal is capable of being peeled off to be used repetitively.

15. A dedicated short-range communication on-vehicle apparatus according to claim 1,

wherein said adhesive member is constituted by a double-side adhesive tape shaped in a predetermined character

pattern.

16. A dedicated short-range communication on-vehicle apparatus according to claim 15,  
wherein said double-side adhesive tape is colored.